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(54) WATER-DISPERSIBLE HOT MELT COMPOSITION, MOISTUREPROOF PAPER USING THE SAME AND THEIR PRODUCTION

(57)Abstract:
PROBLEM TO BE SOLVED: To obtain a hot melt composition capable of dispersing into water and excellent in moistureproofness, and moistureproof paper coated therewith.
SOLUTION: This hot melt composition is composed of a first component comprising an atactic polypropylene and/or an amorphous poly-alpha-olefin, a second component comprising waxes and a third component comprising a tackiness-providing agent and a blend ratio of the first component is equivalent to or larger than that of the third component. The moistureproof paper is obtained by applying the hot melt composition to a paper substrate.

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CLAIMS

[Claim(s)]
[Claim 1] That consist of three components of a tackifier as waxes and the 3rd component as atactic polypropylene and/or an amorphous poly alpha olefin, and the 2nd component as the 1st component, and the loadings of the waxes which are the 2nd component are 10 - 60 % of the weight, and the blending ratio of coal of the 1st component and the 3rd component is equivalent, or the hot-melt constituent characterized by the 1st component being the amount of dominance.
[Claim 2] The floor lining paper which consists of a paper base and a hot-melt constituent according to claim 1 and which was able to be disaggregated and was excellent in dampproofing.
[Claim 3] The manufacture method of the floor lining paper which was able to be disaggregated and was excellent in dampproofing characterized by carrying out coating of the hot-melt constituent according to claim 1 to a paper base.

[Translation done.]

DETAILED DESCRIPTION

[Detailed Description of the Invention]
[0001]
[The technical field to which invention belongs] The disaggregation which uses a water-dispersion hot-melt constituent and this constituent is possible for this invention, and it relates to the floor lining paper excellent in dampproofing, and its manufacture method.
[0002]
[Description of the Prior Art] Generally, with the floor lining paper, what carried out coating of the olefin system resins, such as polyethylene and polypropylene, is well known by paper, and is widely used for it. The floor lining paper which carried out coating of this olefin system resin is excellent in dampproofing, and processability is cheap and it is not only good, but very excellent as a floor lining paper. On the other hand, in the pulper used at the process which reproduces and pulps paper since the coat intensity of a damp proof course is too strong, in view of the viewpoint of recycling nature, i.e., waste-paper reproduction, the olefin system resin layer desorbed from the fiber section of paper is not distributed finely, but it remains as a lump or a film, it adheres to the front face of the paper in which these were reproduced, bleeding and irregularity occur, and recycling of a waste paper is made impossible.
[0003] Moreover, while a recyclable floor lining paper is called for in recent years, the floor lining paper which carried out coating of the emulsion which consists of synthetic rubber latex and a wax emulsion is proposed. This floor lining paper is excellent in dampproofing, and also has the recycling nature to a waste paper. However, since coating liquid is an emulsion, a huge dryer is required to carry out coat formation, and productivity is bad compared with the coating of an olefin system resin. Moreover, dryness progresses, with coat formation of a damp proof course, curl occurs in a floor lining paper, or the wax in coating liquid carries out bleeding to it, and slipping occurs in a floor lining paper. therefore -- the rear face of an emulsion coating type floor lining paper -- curl prevention and the nonskid purpose -- colloidal silica etc. -- coating -- not carrying out -- it does not obtain but there is a problem that the number of processes increases Moreover, each of these moisture-proof liquid is used very much only for eye an expensive hatchet and particular application in the present condition, and the actual condition is hardly used for general floor lining papers.
[0004]
[Problem(s) to be Solved by the Invention] this invention solves the conventional fault like the above, is excellent in dampproofing, and has the recycling nature to a waste paper, and it is cheap and aims at offering the floor lining paper excellent in productivity.
[0005]
[Means for Solving the Problem] The persons from a book found out that the floor lining paper which satisfies the above-mentioned purpose could be offered by carrying out coating of the hot-melt constituent which blended the specific component at a specific rate to a paper base, as a result of inquiring wholeheartedly to solve the above-mentioned technical problem. The 1st of this invention as the 1st component namely, as atactic polypropylene and/or an amorphous poly alpha olefin, and the 2nd component As waxes and the 3rd component, consist of three components of a tackifier, and the loadings of the waxes which are the 2nd component are 10 - 60 % of the weight, and the blending ratio of coal of the 1st component and the 3rd component is equivalent. The hot-melt constituent characterized by the 1st component being the amount of dominance or the 2nd of this invention The disaggregation characterized by the 3rd of this invention carrying out coating of the above-mentioned hot-melt constituent for the floor lining paper which consists of the aforementioned constituent and a paper base to a paper base is possible, and the manufacture method of the floor lining paper excellent in dampproofing is made into the contents, respectively.
[0006] Cost is cheap, it is a by-product at the time of isotactic polypropylene manufacture, and they are [the atactic polypropylene as the 1st component used for the hot-melt constituent of this invention has a fluidity and good membrane formation nature, and] very flexible. Moreover, an amorphous poly alpha olefin is the amorphia olefin system polymer which copolymerized a propylene independent or a propylene, ethylene, butene-1, etc. About 1000 to 100000 thing is suitable for such molecular weight. There is not coat intensity for a damp proof course with molecular weight sufficient by less than 1000, and bleeding of a resin may occur in the dryness process of recycled-paper-izing further. Moreover, since the fluidity of a resin is bad and cannot form a uniform damp proof course if 100000 is exceeded, good dampproofing may not be acquired. Moreover, on the

occasion of use, independent or two sorts or more are used, mixing.
[0007] Next, when it divides roughly into the waxes as the 2nd component, there are two kinds of them, a natural system wax and a synthetic system wax, which these waxes may be chosen, and independent or two sorts or more are used, mixing. There are paraffin wax, a micro crystalline wax, a montan wax, carnauba wax, a candelilla wax, etc. as natural system wax, and there is a low-molecular-weight-polyethylene wax etc. among the synthetic system waxes.
[0008] Moreover, as what has a functional group, as what there are rosin, denaturation rosin and these ester compounds, an alkylphenol resin, rosin and an alkylphenol denaturation xylene resin, terpene phenol resin, etc., and does not have a functional group, there are a terpene system resin, an olefin system resin, a styrene resin, an aromatic system petroleum resin, a cumarone indene resin, etc., these any may be chosen, and independent or two sorts or more are used for the tackifier as the 3rd component, mixing to it.
[0009] In this invention, it is characterized by that the hot-melt constituent which forms a damp proof course has the equivalent blending ratio of coal with the tackifier whose loadings of the waxes which are the 2nd component are the atactic polypropylene and/or the amount of amorphous poly alpha olefins which are 10 - 60 % of the weight, and are the 1st component, and the 3rd component, or the 1st component being the amount of dominance.
[0010] If the loadings of the waxes which are the 2nd component become less than 10% of the weight, the rate for which the 1st component accounts will increase, the underwater dispersibility of a hot-melt constituent is bad, the film fragment of a hot-melt constituent will adhere to the front face of the reproduced paper, and bleeding and irregularity will occur. Moreover, when the loadings of the waxes which are the 2nd component exceeded 60 % of the weight, the flexibility of a damp proof course falls and a floor lining paper is bent crosswise, a crack arises in a damp proof course, a moisture vapor transmission falls remarkably, and a moisture-proof function is no longer achieved.
[0011] In the blending ratio of coal of the atactic polypropylene and/or the amount of amorphous poly alpha olefins which are the 1st component, and the tackifier which is the 3rd component, when the amount of the 1st component decreased, the flexibility of a damp proof course falls and a floor lining paper is bent crosswise, a crack arises in a damp proof course, a moisture vapor transmission falls remarkably, and a moisture-proof function is no longer achieved. Therefore, in the hot-melt constituent which consists of combination which comes out [above-mentioned] out of range, dampproof and water-dispersion coexistence becomes difficult. Although use of a roll coater, a slot orifice coating machine, an extrusion coating machine, etc. is possible for the coating method for a paper base, it is not limited to these but what method may be used for it.
[0012]
[Example] Although an example is given to below and this invention is explained to it still in detail, this inventions are not these things limited to seeing. In addition, in the following publications, especially % shows weight %, unless it refuses.
[0013] Example 1 atactic polypropylene (APP) 45%, 25% [of aromatic denaturation terpene polymers] (softening temperature of 125 degrees C], two or less acid number) and carnauba wax (softening temperature [of 86 degrees C], acid-number 6, two or less penetration) 30% was heated at about 160-170 degrees C, it stirred enough so that each component might distribute uniformly in the place which all the material dissolved, and the hot-melt constituent was produced. It applied two times about 18 g/m on the kraft paper of 75 g/m2 using my YABA which heated the hot-melt constituent of the acquired melting state beforehand, and the floor lining paper was obtained. About the obtained floor lining paper, the disaggregation nature and the moisture vapor transmission by water were measured by the method shown below. The result showed the disaggregation nature by water is good, and equivalent to the floor lining paper to which the moisture vapor transmission in a plate and a cross-joint chip box carried out coating of the olefin system resin, or the good dampproofing beyond it, as shown in Table 1.
[0014] (1) the floor-lining-paper sample cut on 2-3cm square using disaggregation nature Kumagai **** Industrial standard pulp disaggregation machine -- the water of 2L -- receiving -- 40g (2% of pulp densities) injection -- carrying out -- after stirring during 30 minutes, and a pulp solution -- and although paper making was carried out, judge resin dispersibility by viewing on the following criteria
O : on the paper by which paper making was carried out, existence of a resin can hardly check.
x: Many resins which are not finely distributed by the paper by which paper making was carried out adhere and exist.
[0015] (2) Measure a moisture vapor transmission based on a moisture-vapor-transmission cylinder plate method (JIS Z 0208). A moisture vapor transmission measures about plate-like and a cross-joint chip box. In addition, a cross-joint chip box folds the center of a sample crosswise, and after it carries out a fold top 1 **** with a 3kg roller and makes a crease, it measures a moisture vapor transmission.
[0016] In example 2 example 1, the hot-melt constituent was produced for the blending ratio of coal atactic polypropylene 55% as 35% [of aromatic denaturation terpene polymers], and carnauba wax 10%. Using the above-mentioned hot-melt constituent, the floor lining paper was produced by the same method as an example 1, and disaggregation nature and dampproofing were measured. The result showed the disaggregation nature by water is good, and equivalent to the floor lining paper to which the moisture vapor transmission in a plate and a cross-joint chip box carried out coating of the olefin system resin, or the good dampproofing beyond it, as shown in Table 1.
[0017] Example 3 atactic polypropylene 25%, 25% of aromatic denaturation ten pen polymers, and paraffin wax (softening temperature [of 69 degrees C], penetration 15) 25%, hard oxidization wax (softening temperature [of 100 degrees C], acid-number 12, penetration 8) 25% was mixed, and the hot-melt constituent was produced by the same method as an example 1.

The floor lining paper was produced by the same method as an example 1 using the above-mentioned hot-melt constituent, and disaggregation nature and dampproofing were measured. The result showed the disaggregation nature by water is good, and equivalent to the floor lining paper to which the moisture vapor transmission in a plate and a cross-joint chip box carried out coating of the olefin system resin, or the good dampproofing beyond it, as shown in Table 1.

[0018] In example 4 example 1, **** for the amounts of said etc. produced the hot-melt constituent for the amorphous poly alpha olefin (APAO) similarly instead of atactic polypropylene. The floor lining paper was produced by the same method as an example 1 using the above-mentioned hot-melt constituent, and disaggregation nature and dampproofing were measured. The result showed the disaggregation nature by water is good, and equivalent to the floor lining paper to which the moisture vapor transmission in a plate and a cross-joint chip box carried out coating of the olefin system resin, or the good dampproofing beyond it, as shown in Table 1.

[0019] In example 5 example 4, **** for the amounts of said etc. produced the hot-melt constituent for rosin (softening temperature of 80-87 degrees C, acid numbers 165-175) similarly instead of the aromatic denaturation TERUPERU polymer. The floor lining paper was produced by the same method as an example 1 using the above-mentioned hot-melt constituent, and disaggregation nature and dampproofing were measured. The result showed the disaggregation nature by water is good, and equivalent to the floor lining paper to which the moisture vapor transmission in a plate and a cross-joint chip box carried out coating of the olefin system resin, or the good dampproofing beyond it, as shown in Table 1.

[0020] Example of comparison 1 atactic polypropylene 50%, 50% of aromatic denaturation terpene polymers was mixed, and the hot-melt constituent was produced by the same method as an example 1. The floor lining paper was produced by the same method as an example 1 using the above-mentioned hot-melt constituent, and disaggregation nature and dampproofing were measured. Although the disaggregation nature of the result by water was good as shown in Table 1, as compared with the floor lining paper to which the moisture vapor transmission in a plate and a cross-joint chip box carried out coating of the olefin system resin, it was inferior, and satisfying dampproofing was not acquired.

[0021] Example of comparison 2 atactic polypropylene 50%, paraffin wax 25%, hard oxidization wax 25% was mixed and the hot-melt constituent was produced by the same method as an example 1. The floor lining paper was produced by the same method as an example 1 using the above-mentioned hot-melt constituent, and disaggregation nature and dampproofing were measured. Although good dampproofing was acquired if monotonous when the floor lining paper and moisture vapor transmission which carried out coating of the olefin system resin were measured although the disaggregation nature by water was good as the result was shown in Table 1, in the cross-joint chip box, dampproofing fell remarkably.

[0022] In example of comparison 3 example 1, the hot-melt constituent was produced for the blending ratio of coal atactic polypropylene 57% as 38% [of aromatic denaturation terpene polymers], and carnauba wax 5%. The floor lining paper was produced by the same method as an example 1 using the above-mentioned hot-melt constituent, and disaggregation nature and dampproofing were measured. As shown in Table 1, since the disaggregation nature by water was bad on a par [the moisture vapor transmission in a plate and a cross-joint chip box] with the floor lining paper which carried out coating of the olefin system resin although it is the good dampproofing beyond it, and a damp proof course did not distribute finely, recycling of a waste paper was impossible for the result.

[0023] In example of comparison 4 example 1, the hot-melt constituent was produced for the blending ratio of coal atactic polypropylene 18% as 12% [of aromatic denaturation terpene polymers], and carnauba wax 70%. The floor lining paper was produced by the same method as an example 1 using the above-mentioned hot-melt constituent, and disaggregation nature and dampproofing were measured. Although good dampproofing was acquired if monotonous when the floor lining paper and moisture vapor transmission which carried out coating of the olefin system resin were measured although the disaggregation nature by water was good as the result was shown in Table 1, in the cross-joint chip box, dampproofing fell remarkably.

[0024] In example of comparison 5 example 1, the hot-melt constituent was produced for the blending ratio of coal atactic polypropylene 17% as 33% [of aromatic denaturation terpene polymers], and carnauba wax 50%. The floor lining paper was produced by the same method as an example 1 using the above-mentioned hot-melt constituent, and disaggregation nature and dampproofing were measured. Although good dampproofing was acquired if monotonous when the floor lining paper and moisture vapor transmission which carried out coating of the olefin system resin were measured although the disaggregation nature by water was good as the result was shown in Table 1, in the cross-joint chip box, dampproofing fell remarkably.

[0025] Example of comparison 6 styrene-isoprene-styrene block-copolymer (SIS) 30%, 20% [of aromatic denaturation terpene polymers] and paraffin wax 50% was mixed, and the hot-melt constituent was produced by the same method as an example 1. The floor lining paper was produced by the same method as an example 1 using the above-mentioned hot-melt constituent, and disaggregation nature and dampproofing were measured. As the result was shown in Table 1, the disaggregation nature by water was bad, since a damp proof course did not distribute finely, recycling of a waste paper was impossible, and as compared with the floor lining paper to which the moisture vapor transmission in a plate and a cross-joint chip box carried out coating of the olefin system resin, it was inferior, and satisfying dampproofing was not acquired.

[0026]

[Table 1]

	配合 (%)								離解性	透湿度 (g/m²·24hrs)	
	第1成分			第2成分			第3成分			平板	十字折り
	APP	APAO	SIS	カルナバワックス	パラフィンワックス	硬質酸化ワックス	芳香族変性テルペン重合体	ロジン			
実施例1	45			30			25		○	10	29
〃 2	55			10			35		○	11	15
〃 3	25				25	25	25		○	14	24
〃 4		45		30			25		○	20	17
〃 5		45		30				25	○	23	36
比較例1	50						50		○	50	103
〃 2	50				25	25			○	4	294
〃 3	57			5			38		×	20	19
〃 4	18			70			12		○	36	343
〃 5	17			50			33		○	22	349
〃 6			30		50		20		×	62	329

[0027]
[Effect of the Invention] The floor lining paper which carried out coating of the hot-melt constituent of this invention does not have equivalent to the floor lining paper which carried out coating of the olefin system resin, or a dampproof fall there is dampproofing beyond it and according to bending etc. the passage on **. Since it also has the dispersibility equivalent to the floor lining paper which can recycle the emulsion coating type furthermore proposed in recent years over water and a dryness process is not needed, there are no worries about curl, and it is cheap also in facility, and working capacity is also good. Moreover, since atactic polypropylene cheap also in price and/or an amorphous poly alpha olefin are made into a principal component, a cheaply recyclable floor lining paper can be offered.

[Translation done.]

PRIOR ART

[Description of the Prior Art] Generally, with the floor lining paper, what carried out coating of the olefin system resins, such as polyethylene and polypropylene, is well known by paper, and is widely used for it. The floor lining paper which carried out coating of this olefin system resin is excellent in dampproofing, and processability is cheap and it is not only good, but very excellent as a floor lining paper. On the other hand, in the pulper used at the process which reproduces and pulps paper since the coat intensity of a damp proof course is too strong, in view of the viewpoint of recycling nature, i.e., waste-paper reproduction, the olefin system resin layer desorbed from the fiber section of paper is not distributed finely, but it remains as a lump or a film, it adheres to the front face of the paper in which these were reproduced, bleeding and irregularity occur, and recycling of a waste paper is made impossible.

[0003] Moreover, while a recyclable floor lining paper is called for in recent years, the floor lining paper which carried out coating of the emulsion which consists of synthetic rubber latex and a wax emulsion is proposed. This floor lining paper is excellent in dampproofing, and also has the recycling nature to a waste paper. However, since coating liquid is an emulsion, a huge dryer is required to carry out coat formation, and productivity is bad compared with the coating of an olefin system resin. Moreover, dryness progresses, with coat formation of a damp proof course, curl occurs in a floor lining paper, or the wax in coating liquid carries out bleeding to it, and slipping occurs in a floor lining paper. therefore -- the rear face of an emulsion coating type floor lining paper -- curl prevention and the nonskid purpose -- colloidal silica etc. -- coating -- not carrying out -- it does not obtain but there is a problem that the number of processes increases Moreover, each of these moisture-proof liquid is used very much only for eye an expensive hatchet and particular application in the present condition, and the actual condition is hardly used for general floor lining papers.

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(57) Abstract:

PROBLEM TO BE SOLVED: To obtain a hot melt composition capable of dispersing into water and excellent in moistureproofness, and moistureproof paper coated therewith.

SOLUTION: This hot melt composition is composed of a first component comprising an atactic polypropylene and/or an amorphous poly-alpha-olefin, a second component comprising waxes and a third component comprising a tackiness-providing agent and a blend ratio of the first component is equivalent to or larger than that of the third component. The moistureproof paper is obtained by applying the hot melt composition to a paper substrate.

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(54)【発明の名称】　水分散性ホットメルト組成物及びこれを用いた防湿紙並びにその製造方法

(57)【要約】

【課題】　水分散可能で防湿性に優れたホットメルト組成物及びこれを塗工した防湿紙を提供する。

【解決手段】　第１成分として、アタクチックポリプロピレン及び／又はアモルファスポリアルファオレフィン、第２成分として、ワックス類、第３成分として、粘着付与剤の３成分から成り、第２成分であるワックス類の配合量が１０～６０重量％で、かつ第１成分と第３成分との配合割合が同等又は、第１成分が優位量であることを特徴とするホットメルト組成物、及びこれを紙基材に塗工してなる。

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【特許請求の範囲】

【請求項１】　第１成分として、アタクチックポリプロピレン及び／又はアモルファスポリアルファオレフィン、第２成分として、ワックス類、第３成分として、粘着付与剤の３成分から成り、第２成分であるワックス類の配合量が１０～６０重量％で、かつ第１成分と第３成分との配合割合が同等又は、第１成分が優位量であることを特徴とするホットメルト組成物。

【請求項２】　紙基材と請求項１記載のホットメルト組成物からなる、離解可能で防湿性に優れた防湿紙。

【請求項３】　請求項１記載のホットメルト組成物を紙基材に塗工することを特徴とする、離解可能で防湿性に優れた防湿紙の製造方法。

【発明の詳細な説明】

【０００１】

【発明の属する技術分野】本発明は、水分散性ホットメルト組成物及び該組成物を用いる、離解可能で防湿性に優れた防湿紙並びにその製造方法に関するものである。

【０００２】

【従来の技術】一般に防湿紙とは、紙にポリエチレン、ポリプロピレンなどのオレフィン系樹脂を塗工したものが良く知られており、広く使用されている。このオレフィン系樹脂を塗工した防湿紙は、防湿性に優れ、加工性が良いばかりでなく、安価であり、防湿紙として非常に優れている。しかし、その反面、リサイクル性、即ち故紙再生という観点からみると、防湿層の被膜強度が強すぎるため、紙を再生しパルプ化する工程で使用されるパルパーでは、紙の繊維部から脱離したオレフィン系樹脂層が細かく分散されず塊やフィルムとして残り、これらが再生された紙の表面に付着してにじみや凹凸が発生して故紙のリサイクルを不可能にしている。

【０００３】また近年、リサイクル可能な防湿紙が求められるなかで、合成ゴムラテックスとワックスエマルジョンとからなるエマルジョンを塗工した防湿紙が提案されている。この防湿紙は防湿性に優れ、かつ故紙へのリサイクル性も有している。しかしながら、塗工液がエマルジョンであるため、被膜形成するのに長大な乾燥設備が必要で、かつオレフィン系樹脂の塗工に比べ生産性が悪い。また、乾燥が進み、防湿層の被膜形成にともなって、防湿紙にカールが発生したり、塗工液中のワックスがブリードし、防湿紙に滑りが発生する。従って、エマルジョン塗工タイプの防湿紙の裏面には、カール防止や滑り防止の目的でコロイダルシリカなどを塗工せざるをえず、工程数が増加するという問題がある。また、これらの防湿液は、いずれも現状では非常に高価なため、特殊用途のみに使用され一般の防湿紙用にはほとんど使用されていないのが実情である。

【０００４】

【発明が解決しようとする課題】本発明は上記の如き従来の欠点を解決し、防湿性に優れ、故紙へのリサイクル性があり、安価で生産性に優れた防湿紙を提供することを目的とする。

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【０００５】

【課題を解決するための手段】本発明者らは上記課題を解決するべく鋭意検討した結果、特定の成分を特定の割合で配合したホットメルト組成物を紙基材に塗工することにより、上記目的を満足する防湿紙が提供できることを見出した。即ち、本発明の第１は、第１成分として、アタクチックポリプロピレン及び／又はアモルファスポリアルファオレフィン、第２成分として、ワックス類、第３成分として、粘着付与剤の３成分から成り、第２成分であるワックス類の配合量が１０～６０重量％で、かつ第１成分と第３成分との配合割合が同等又は、第１成分が優位量であることを特徴とするホットメルト組成物を、本発明の第２は、前記組成物と紙基材とから成る防湿紙を、本発明の第３は、上記ホットメルト組成物を紙基材に塗工することを特徴とする、離解可能で防湿性に優れた防湿紙の製造方法をそれぞれ内容とする。

【０００６】本発明のホットメルト組成物に使用される第１成分としてのアタクチックポリプロピレンは、アイソタクチックポリプロピレン製造時の副産物で、コストが安く、流動性及び成膜性が良く、極めて柔軟である。またアモルファスポリアルファオレフィンは、プロピレン単独あるいはプロピレンとエチレンやブテン－１等を共重合した非晶性のオレフィン系ポリマーである。これらの分子量は１０００～１０００００程度のものが適当である。分子量が１０００未満では防湿層に十分な被膜強度がなく、さらに再生紙化の乾燥工程において樹脂のにじみが発生する場合がある。また１０００００を超えると樹脂の流動性が悪く、均一な防湿層が形成できないため、良好な防湿性が得られない場合がある。また使用に際し、単独又は２種以上を混合して使用される。

【０００７】次に第２成分としてのワックス類には、大別すると天然系ワックスと合成系ワックスの２種類があり、これらのいずれのワックスを選択してもよく、また単独又は２種以上を混合して使用される。天然系ワックスには、パラフィンワックス、マイクロクリスタリンワックス、モンタンワックス、カルナバワックス、キャンデリラワックスなどがあり、また合成系ワックスには、低分子量ポリエチレンワックスなどがある。

【０００８】また第３成分としての粘着付与剤には、官能基を有するものとして、ロジン、変性ロジン、及びこれらのエステル化合物、アルキルフェノール樹脂、ロジン及びアルキルフェノール変性キシレン樹脂、テルペンフェノール樹脂などがあり、また官能基を有しないものとして、テルペン系樹脂、オレフィン系樹脂、スチレン系樹脂、芳香族系石油樹脂、クマロンインデン樹脂などがあり、これらのいずれを選択してもよく、また単独又は２種以上を混合して使用される。

【０００９】本発明において、防湿層を形成するホット

メルト組成物は、第２成分であるワックス類の配合量が１０～６０重量%で、第１成分であるアタクチックポリプロピレン及び／又はアモルファスポリアルファオレフィン量と、第３成分である粘着付与剤との配合割合が同等又は第１成分が優位量であることを特徴としている。

【００１０】第２成分であるワックス類の配合量が１０重量%未満になると、第１成分の占める割合が増加し、ホットメルト組成物の水中での分散性が悪く、再生された紙の表面にホットメルト組成物のフィルム破片が付着してにじみや凹凸が発生する。また、第２成分であるワックス類の配合量が６０重量%を超えると、防湿層の柔軟性が低下し、防湿紙を十文字に折り曲げた時、防湿層に割れが生じ透湿度が著しく低下して、防湿機能が果たされなくなる。

【００１１】第１成分であるアタクチックポリプロピレン及び／又はアモルファスポリアルファオレフィン量と、第３成分である粘着付与剤との配合割合において、第１成分の量が少なくなると、防湿層の柔軟性が低下し、防湿紙を十文字に折り曲げた時、防湿層に割れが生じ透湿度が著しく低下して、防湿機能が果たされなくなる。従って、上記範囲外での配合からなるホットメルト組成物では、防湿性及び水分散性の両立が困難となる。紙基材に対する塗工方法は、ロールコーター、スロットオリフィスコーター、エクストルージョンコーターなどの使用が可能であるが、これらに限定されず、いかなる方法を利用してもよい。

【００１２】

【実施例】以下に本発明を実施例を挙げて更に詳細に説明するが、本発明はこれらのみに限定されるものではない。尚、以下の記載において、%は特に断らない限り、重量%を示す。

【００１３】実施例１

アタクチックポリプロピレン（ＡＰＰ）４５%、芳香族変性テルペン重合体（軟化点１２５℃、酸価２以下）２５%、カルナバワックス（軟化点８６℃、酸価６、針入度２以下）３０%を約１６０～１７０℃に加熱し、材料の全てが溶解したところで各成分が均一に分散する様に十分攪拌し、ホットメルト組成物を作製した。得られた溶融状態のホットメルト組成物を予め加熱しておいたマイヤーバーを使って７５ｇ／m^2のクラフト紙上に約１８ｇ／m^2塗布して防湿紙を得た。得られた防湿紙について、水による離解性と透湿度を以下に示した方法で測定した。結果は表１に示したように、水による離解性が良好で、かつ平板及び十字折りでの透湿度がオレフィン系樹脂を塗工した防湿紙と同等又はそれ以上の良好な防湿性を示した。

【００１４】（１）離解性

熊谷理機工業（株）標準パルプ離解機を用い、２～３cm角に切断した防湿紙サンプルを２Ｌの水に対して４０ｇ（パルプ濃度２%）投入して３０分間撹拌後、パルプ溶液及び抄紙したものの樹脂分散性を下記の基準で目視により判定する。

○：抄紙された紙に、樹脂の存在がほとんど確認できない。

×：抄紙された紙に、細かく分散されていない樹脂が多数付着・存在する。

【００１５】（２）透湿度

カップ法（ＪＩＳ　Ｚ　０２０８）に基づいて透湿度を測定する。透湿度は平板状と十字折りについて測定する。尚、十字折りは、サンプルの中央を十文字に折り、折り目上を３Kgのローラーで１往復させ折り目をつけた後、透湿度を測定する。

【００１６】実施例２

実施例１において、配合割合をアタクチックポリプロピレン５５%、芳香族変性テルペン重合体３５%、カルナバワックス１０%として、ホットメルト組成物を作製した。上記ホットメルト組成物を用い、実施例１と同様の方法で防湿紙を作製し、離解性及び防湿性を測定した。結果は表１に示したように、水による離解性が良好で、かつ平板及び十字折りでの透湿度がオレフィン系樹脂を塗工した防湿紙と同等又はそれ以上の良好な防湿性を示した。

【００１７】実施例３

アタクチックポリプロピレン２５%、芳香族変性テンペン重合体２５%、パラフィンワックス（軟化点６９℃、針入度１５）２５%、硬質酸化ワックス（軟化点１００℃、酸価１２、針入度８）２５%を混合して実施例１と同様の方法でホットメルト組成物を作製した。上記ホットメルト組成物を用いて実施例１と同様の方法で防湿紙を作製し、離解性及び防湿性を測定した。結果は表１に示したように、水による離解性が良好で、かつ平板及び十字折りでの透湿度がオレフィン系樹脂を塗工した防湿紙と同等又はそれ以上の良好な防湿性を示した。

【００１８】実施例４

実施例１においてアタクチックポリプロピレンの代わりに、アモルファスポリアルファオレフィン（ＡＰＡＯ）を同量用いた他は同様にしてホットメルト組成物を作製した。上記ホットメルト組成物を用いて実施例１と同様の方法で防湿紙を作製し、離解性及び防湿性を測定した。結果は表１に示したように、水による離解性が良好で、かつ平板及び十字折りでの透湿度がオレフィン系樹脂を塗工した防湿紙と同等又はそれ以上の良好な防湿性を示した。

【００１９】実施例５

実施例４において、芳香族変性テルペル重合体の代わりにロジン（軟化点８０～８７℃、酸価１６５～１７５）を同量用いた他は同様にしてホットメルト組成物を作製した。上記ホットメルト組成物を用いて実施例１と同様の方法で防湿紙を作製し、離解性及び防湿性を測定した。結果は表１に示したように、水による離解性が良好

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で、かつ平板及び十字折りでの透湿度がオレフィン系樹脂を塗工した防湿紙と同等又はそれ以上の良好な防湿性を示した。

【００２０】比較例１

アタクチックポリプロピレン５０％、芳香族変性テルペン重合体５０％を混合して、実施例１と同様の方法でホットメルト組成物を作製した。上記ホットメルト組成物を用いて実施例１と同様の方法で防湿紙を作製し、離解性及び防湿性を測定した。結果は表１に示したように、水による離解性が良好であるが、平板及び十字折りでの透湿度がオレフィン系樹脂を塗工した防湿紙と比較すると劣り、満足できる防湿性が得られなかった。

【００２１】比較例２

アタクチックポリプロピレン５０％、パラフィンワックス２５％、硬質酸化ワックス２５％を混合して、実施例１と同様の方法でホットメルト組成物を作製した。上記ホットメルト組成物を用いて実施例１と同様の方法で防湿紙を作製し、離解性及び防湿性を測定した。結果は表１に示したように、水による離解性は良好であるが、オレフィン系樹脂を塗工した防湿紙と透湿度を比較すると、平板では良好な防湿性が得られるが、十字折りでは著しく防湿性が低下した。

【００２２】比較例３

実施例１において、配合割合をアタクチックポリプロピレン５７％、芳香族変性テルペン重合体３８％、カルナバワックス５％として、ホットメルト組成物を作製した。上記ホットメルト組成物を用いて実施例１と同様の方法で防湿紙を作製し、離解性及び防湿性を測定した。結果は表１に示したように、平板及び十字折りでの透湿度はオレフィン系樹脂を塗工した防湿紙と同等又はそれ以上の良好な防湿性であるが、水による離解性が悪く防湿層が細かく分散しないため、故紙のリサイクルが不可能であった。

【００２３】比較例４　＊

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＊実施例１において、配合割合をアタクチックポリプロピレン１８％、芳香族変性テルペン重合体１２％、カルナバワックス７０％として、ホットメルト組成物を作製した。上記ホットメルト組成物を用いて実施例１と同様の方法で防湿紙を作製し、離解性及び防湿性を測定した。結果は表１に示したように、水による離解性は良好であるが、オレフィン系樹脂を塗工した防湿紙と透湿度を比較すると、平板では良好な防湿性が得られるが、十字折りでは著しく防湿性が低下した。

【００２４】比較例５

実施例１において、配合割合をアタクチックポリプロピレン１７％、芳香族変性テルペン重合体３３％、カルナバワックス５０％として、ホットメルト組成物を作製した。上記ホットメルト組成物を用いて実施例１と同様の方法で防湿紙を作製し、離解性及び防湿性を測定した。結果は表１に示したように、水による離解性は良好であるが、オレフィン系樹脂を塗工した防湿紙と透湿度を比較すると、平板では良好な防湿性が得られるが、十字折りでは著しく防湿性が低下した。

【００２５】比較例６

スチレン－イソプレン－スチレンブロックコポリマー（ＳＩＳ）３０％、芳香族変性テルペン重合体２０％、パラフィンワックス５０％を混合して、実施例１と同様の方法でホットメルト組成物を作製した。上記ホットメルト組成物を用いて実施例１と同様の方法で防湿紙を作製し、離解性及び防湿性を測定した。結果は表１に示したように、水による離解性が悪く、防湿層が細かく分散しないため故紙のリサイクルが不可能でかつ、平板及び十字折りでの透湿度がオレフィン系樹脂を塗工した防湿紙と比較すると劣り、満足できる防湿性が得られなかった。

【００２６】

【表１】

	配合 (%)								離解性	透湿度 (g/m²・24hrs)	
	第1成分			第2成分			第3成分				
	APP	APAO	SIS	カルナバワックス	パラフィンワックス	硬質酸化ワックス	芳香族変性テルペン重合体	ロジン		平板	十字折り
実施例1	45			30			25		○	10	29
〃 2	55			10			35		○	11	15
〃 3	25				25	25	25		○	14	24
〃 4		45		30			25		○	20	17
〃 5		45		30				25	○	23	36
比較例1	50						50		○	50	103
〃 2	50				25	25			○	4	294
〃 3	57			5			38		×	20	19
〃 4	18			70			12		○	36	343
〃 5	17			50			33		○	22	349
〃 6			30		50		20		×	62	329

【００２７】

【発明の効果】叙上の通り、本発明のホットメルト組成物を塗工した防湿紙は、オレフィン系樹脂を塗工した防湿紙と同等又はそれ以上の防湿性があり、かつ折り曲げ等による防湿性の低下がない。さらに近年提案されているエマルジョン塗工タイプのリサイクル可能な防湿紙と＊同等の、水に対する分散性も有し、かつ乾燥工程を必要としないのでカールの心配がなく、また設備的にも安価であり、作業能率も良好である。また価格的にも、安価なアタクチックポリプロピレン及び／又はアモルファスポリアルファオレフィンを主成分とするので、安価にリサイクル可能な防湿紙を提供することができる。